

Results from the Cosmic Ray Energetics And Mass for the International Space Station (ISS-CREAM) experiment

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The Cosmic Ray Energetics And Mass for the International Space Station (ISS-CREAM) experiment took high energy cosmic ray data for 539 days after its successful installation on the ISS in August 2017. The ISS-CREAM instrument is configured with complementary particle detectors capable of measuring elemental spectra for $Z = 1 - 26$ nuclei in the energy range $10^{12} - 10^{15}$ eV; as well as electrons at multi-TeV energies. The goal is to understand cosmic ray origin, acceleration and propagation by extending direct measurements of cosmic rays to energies that overlap the energy region of air showers measurements. The four layers of finely segmented Silicon Charge Detectors provide precise charge measurements. They have been designed to minimize hits of accompanying backscattered particles in the same segment as the incident cosmic ray particle to avoid the charge misidentification. The sampling tungsten/scintillating-fiber calorimeter identical to the calorimeter for prior CREAM balloon flights provides energy measurements. In addition, scintillator-based Top and Bottom Counting Detectors distinguish electrons from nuclei. Our analysis indicates that the data extend well above 100 TeV. Recent results from the ongoing analysis will be presented.

Keywords

multi-TeV elemental spectra; acceleration limit; spectral features; calorimeter; silicon charge detector; ISS

Collaboration

ISS-Cream

other Collaboration

Subcategory

Experimental Results

Primary author: SEO, Eun-Suk (University of Maryland)

Presenter: SEO, Eun-Suk (University of Maryland)

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